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Great Lakes Science Center

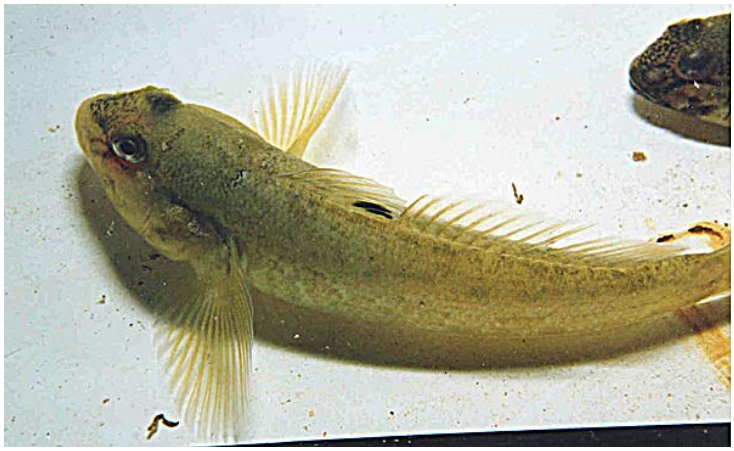
Round Goby: An Exotic Fish in the Great

WHAT IS A ROUND GOBY?

The round goby, *Neogobius melanstomus,* is a small, bottom - dwelling fish that was first found in the Great Lakes region in 1990. Originally from the Black and Caspian Sea areas of Eastern Europe, it is believed that this exotic species arrived in the ballast water of vessels coming into the Great Lakes. Since the first sighting in the St. Clair River, round gobies have spread to all of the Great Lakes and are working their way inland through the rivers and canal systems.

WHAT DOES A ROUND GOBY LOOK LIKE?

Round gobies can reach up to 10 inches in length as adults, but usually they are less than 7 inches long in the Great Lakes. Females and immature male round gobies are a mottled gray and brown color. Spawning males turn almost solid black. Round gobies have a soft body and a large, rounded head with eyes that protrude near the top. Round gobies look similar to our native sculpins, but the two species can be easily separated by the fused pelvic fins on the underside of round gobies. Sculpins have two distinct pelvic fins, not one large fin. This fin can be used by gobies as a suction cup to anchor to rocks and other hard substrates during times of high water flow.



A round goby

Upstream of the small-scale electric barrier

RESEARCH AT THE GREAT LAKES SCIENCE CENTER

Scientists at the Great Lakes Science Center, in cooperation with the University of Michigan, Smith-Root, Inc. and the U.S. Army Corps of Engineers, recently finished a project evaluating the potential for using an electric barrier to slow the spread of round gobies from Lake Michigan through the Illinois Waterway System and into the Mississippi River drainage. Our scientists first worked with round gobies in the laboratory to determine the most effective electrical parameters and then participated in a small-scale field study to test the barrier in a more realistic setting. We were able to establish electrical parameters that successfully deterred passage of the majority of round gobies present. These tests provided guidance for the operation of the electrical barrier scheduled to be built soon in the Illinois Waterway System.

Current research at the Great Lakes Science Center involves comparing the interactions of round goby and Eurasian ruffe, another exotic species. Ruffe were introduced via ballast water to the Duluth Harbor of Lake Superior in 1986. Both species use similar bottom habitats and share the traits of voracious appetites, prolific spawning, and aggressive behavior. The two species are know to occur together in the Duluth Harbor area of Lake Superior and in the Thunder Bay River, a tributary to Lake Huron. Given the impacts both species are already having on native species individually, there is concern over what will

happen when these two species occupy the same space. Current studies are focusing on competition for limited food, shelter and space with special interest in aggressive interactions. New work will be starting soon to see if these interactions change in low light conditions, as both species are generally more active at night.

POTENTIAL IMPACTS

Round gobies are found in all of the Great Lakes with the greatest numbers in Lake Erie, Lake St. Claire and southern Lake Michigan. Many of the areas with round goby populations are best described as infested. Once round gobies arrive they can become the dominant fish species. Round gobies prefer rocky, shallow areas, but have flourished in a variety of habitat types. Regardless of the habitat, round gobies are very aggressive fish that compete with native fishes for food and space. Anglers who fish in areas with round gobies often find that the gobies steal their bait and appear to be the only type of fish in the area.

Round gobies spawn from April-September with females visiting multiple nests to spawn with several different males. Round gobies attach their eggs to the underside of rocks, in pieces of pipe, or in other types of shelter. Male round gobies stay in the nest to provide care for the developing young and will ferociously defend their nests from any intruders. As a result, round gobies can produce a large number of healthy offspring in a very short time.

Round gobies can eat zebra mussels in addition to fish eggs, plankton, fish, and benthic invertebrates. Because zebra mussels are filter feeders that accumulate contaminants in their body tissues, round gobies that eat zebra mussels may be consuming a high level of contaminants. When a predatory fish such as a walleye eats a round go by that has fed primarily on zebra mussels, they may be getting a much larger load of contaminants than they would from eating other types of prey fish. This could put dangerous concentrations of contaminants into sport-fish at a much faster rate.

A closer view of the test barrier—note the wire cables that supply the electricity.

HOW YOU CAN HELP

Do not use round gobies as bait.
Dump bait buckets on land.
Help stop the spread of all aquatic exotics by cleaning your boat and trailer before going to a new water body.
Drain the water from your boat motor and wells on land.
Remove plants and debris from your trailer before leaving the launch ramp.

Investigators:
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Biologists using a seine net for collecting round gobies after a test.